

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Exam: Function Reflections (Practice version 10)**

1. Let function  $f$  be defined by the polynomial below:

$$f(x) = -2x^4 - 3x^3 + 5x^2 - 4x + 7$$

Draw lines that match each function reflection with its polynomial:

**Reflections**

**Polynomials**

$-f(x)$    •

•  $2x^4 - 3x^3 - 5x^2 - 4x - 7$

$-f(-x)$    •

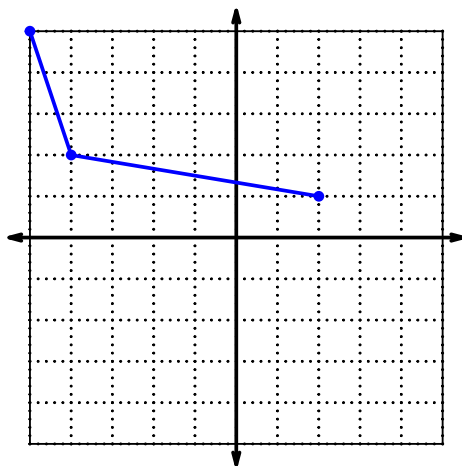
•  $2x^4 + 3x^3 - 5x^2 + 4x - 7$

$f(-x)$    •

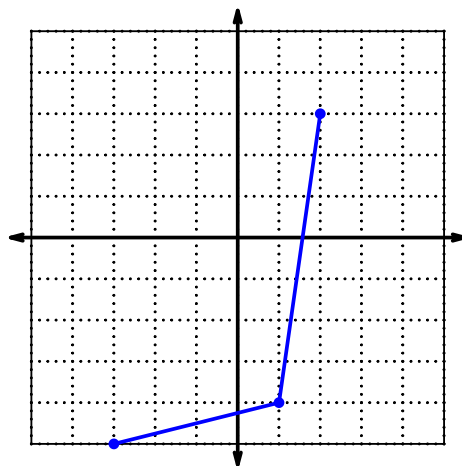
•  $-2x^4 + 3x^3 + 5x^2 + 4x + 7$

2. In each  $xy$  plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The  $x$  axis is horizontal and the  $y$  axis is vertical (as typical), and the scale is equal on both axes.

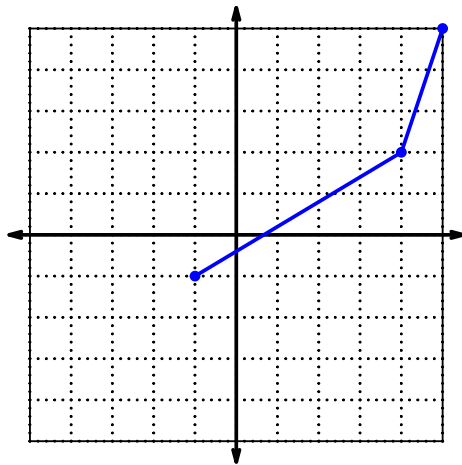
•  $y = g(x)$   
•  $y = -g(x)$



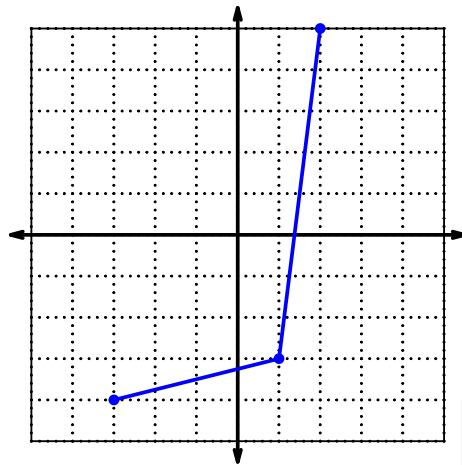
•  $y = h(x)$   
•  $y = h(-x)$



•  $y = m(x)$   
•  $y = m^{-1}(x)$



•  $y = p(x)$   
•  $y = -p(-x)$



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For all questions on this page, the functions  $f$ ,  $g$ , and  $h$  are defined by the table below.

$x$	$f(x)$	$g(x)$	$h(x)$
1	2	4	8
2	4	3	6
3	7	1	5
4	9	7	9
5	5	8	2
6	8	6	4
7	6	5	1
8	3	9	3
9	1	2	7

3. Evaluate  $h(1)$ .

4. Evaluate  $g^{-1}(2)$ .

5. By filling more rows of the table, it is possible to make function  $f$  **even**. If that were done, what would be the value of  $f(-7)$ ?

6. By filling more rows of the table, it is possible to make function  $g$  **odd**. If that were done, what would be the value of  $g(-5)$ ?

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7. A function,  $f$ , is **even** if  $f(x) = f(-x)$  for all  $x$  in the domain. A function,  $g$ , is **odd** if  $g(x) = -g(-x)$  for all  $x$  in the domain.

Let polynomial  $p$  be defined with the following equation:

$$p(x) = -x^3 + x$$

- a. Express  $p(-x)$  as a polynomial in standard form.

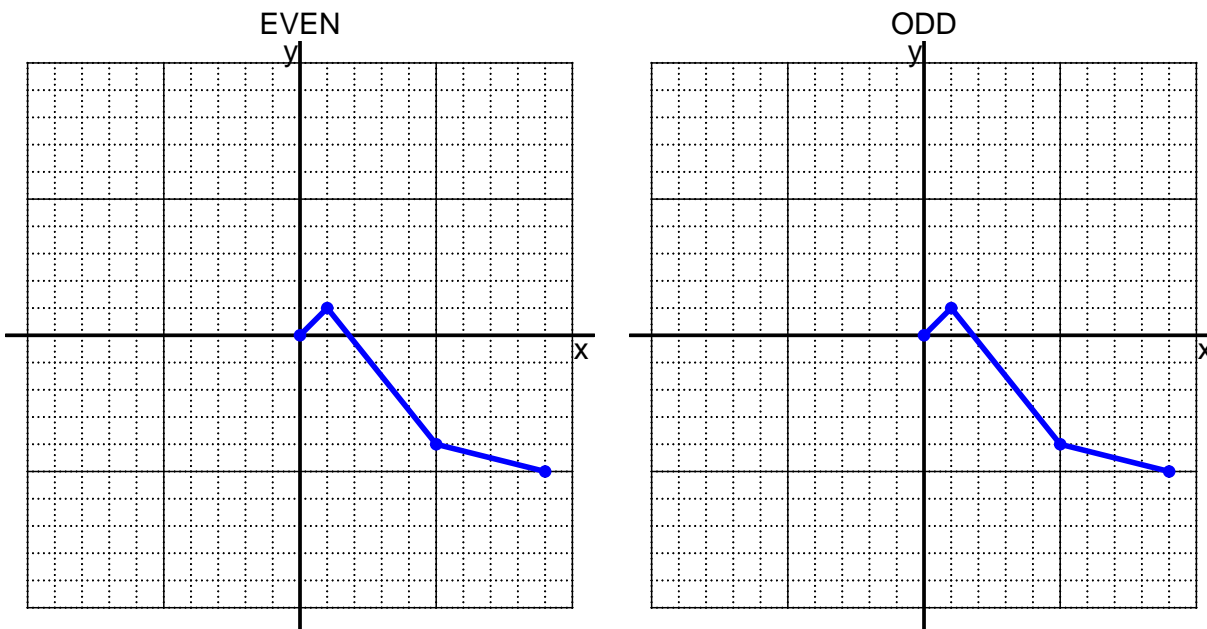
- b. Express  $-p(-x)$  as a polynomial in standard form.

- c. Is polynomial  $p$  even, odd, or neither?

- d. Explain how you know the answer to part c.

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8. I have drawn half of a function. Draw the other half to make it even or odd.



9. Let function  $f$  be defined with the equation below.

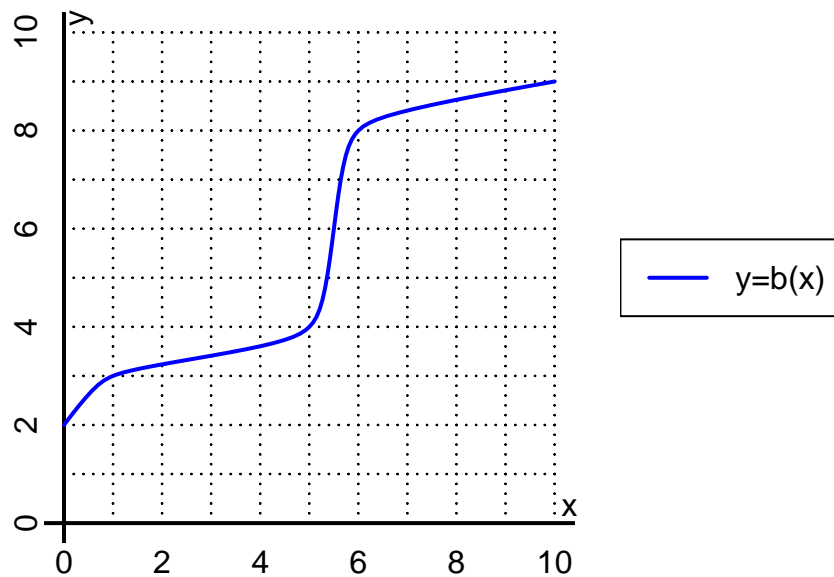
$$f(x) = \frac{x - 4}{5}$$

a. Evaluate  $f(59)$ .

b. Evaluate  $f^{-1}(10)$ .

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10. The function  $b$  is represented by the curve  $y = b(x)$  graphed below.



a. Evaluate  $b(5)$ .

b. Evaluate  $b^{-1}(3)$ .

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11. Function  $f$  is defined by the table below.

a. Complete the columns for  $-f(x)$  and  $f(-x)$  and  $-f(-x)$ .

$x$	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	5			
-1	-8			
0	0			
1	-8			
2	5			

b. Is function  $f$  even, odd, or neither?

c. How do you know the answer to part b?